lent alternative source of MSCs. The aim of this study was to compare different enrichment methods of obtaining MSCs from CB, to generate sufficient numbers of MSCs for transplantation. The plastic adhesion method (PAM) and the depleting method RosetteSep (DMR) on fresh CB units were compared. Both cell fractions were grown in Mesencult complete medium. Their proliferative capacity and their phenotype during culture were tested. The MSC phenotype was evaluated by expression of CD105, glycophorin A, CD29, CD44, CD45, CD31, CD34, CD64, CD62L, CD106, CD117, CD133, CD90, HLA-class I, HLA-DR, CD1a, CD3, CD51, and CD58. Sufficient numbers of cells (56.6 ± 9.2%) were recovered after the PAM and only a few cells (5.3 ± 2.6%) were isolated from the whole CB using the DMR. After the second passage, the PAM allowed 155.5 ± 62.9% of MSCs to be obtained, whereas 108.3 ± 0.99% of MSCs were obtained by the DMR. For both methods, 3 passages were needed to obtain comparable homogeneity, corresponding to an average of 45 days. The CB-derived MSCs were positive for the matrix receptors CD44, CD58, and CD105; the integrins CD29 and CD51; and the markers CD90 and HLA-class I. They were negative for the matrix receptors CD31 and CD62L, as well as the hematopoietic markers CD45, CD34, CD133, CD64, CD117, CD1a, CD3, and HLA-DR. In conclusion, both methods may represent an easy way of obtaining MSCs from CB with the aim of potential use in CB transplantation, because MSCs facilitate and promote the overall engraftment level of multidonor CB grafts.

	>1 Organ Involved	1 Organ Involved	P
Number of patients	11	7	
Age at HSCT	10.2 years (5.7–14.5)	14.5 years (11.8–17.3)	0.1
Age at cGVHD diagnosis	10.5 years (5.8–15)	14.7 years (12.1–17.3)	0.14
Length of therapy	19.5 months (10.9–28.1)	14.2 months (12.2–16.3)	0.3
Sites of involvement			
Skin/MS	11/11	2/7	0.002
Liver	3/11	5/7	0.08
Oral	7/11	0/7	0.01
GI	2/11	0/7	0.3
Lung	1/11	0/7	0.6
Max BMI change	−9% (−17.6%–−1.2%)	10.2% (−2%–20.8%)	0.003
Max weight change	−4% (−13%–5%)	14.8% (2.2%–27.4%)	0.01
Median # quintiles dropped	1.5 (0-4)	0 (0-0)	—
Weight under 25%ile	6/10	0/7	0.01
Weight under 10%ile	5/10	0/7	0.04
Deaths	3/11	0/7	0.2

Continuous variables expressed as mean with 95% CI unless where noted. Frequencies are compared using Fisher's exact test.

LATE EFFECTS/QUALITY OF LIFE

212

WEIGHT LOSS IN PEDIATRIC PATIENTS WITH CHRONIC GRAFT-VERSUS-HOST DISEASE (CGVHD)

Browning, B., Thormann, K., Tse, W., Duerst, R., Kletzel, M., Jacobsohn, D.A. Children's Memorial Hospital, Northwestern University, Chicago, IL.

Weight loss and malnutrition are major problems in patients with cGVHD. In adults, a low body mass index (BMI) is a predictor for mortality; however, weight loss and BMI have not been studied in pediatric patients with cGVHD. A retrospective study of 18 patients at Children's Memorial Hosptial with extensive cGVHD based on the revised Seattle Classification was completed. Median age at SCT was 11.5 years (range, 1–22 years); age at cGVHD diagnosis was 12 years (range, 1–23 years). Median duration of immunsuppressive therapy was 15.5 months (range, 3–51 months). Maximum height, weight, and BMI change were calculated from date of SCT through the duration of cGVHD treatment. Patients were also graphed on standard growth charts. Patients were stratified into groups based on the number of organ systems involved. Patients with multiorgan involvement had a mean maximal BMI decrease of &minus9%, and 50% of these patients had a decrease of 1–4 quintiles on standard weight-for-age growth charts and remain at less than the 10th percentile in expected weight for age. This change in BMI not only indicates a significant decrease in weight but also often a plateau in stature. The resolution of oral and GI symptoms did not appear to reverse this weight loss trend, which indicates a structural alteration in the GI tract or an increased metabolic rate. All of the patients with multiorgan involvement required salvage therapy beyond steroids and CSA, and 3 of them died due to complications of cGVHD. All patients with single organ involvement have resolved their cGVHD with standard therapy. Weight loss and malnutrition are clinically significant issues in pediatric patients with multisystem cGVHD. Weight loss is likely another systemic manifestation of the disease and may contribute to increased mortality in this group. Studies measuring resting energy expenditure and intestinal permeability are underway to further understand the nature of weight loss in this population.

213

EVALUATION OF ORAL MUCOSITIS USING A SELF-REPORTED QUESTIONNAIRE IN PATIENTS WITH HEMATOLOGIC MALIGNANCIES UNDERGOING HIGH-DOSE CHEMORADIOTHERAPY FOLLOWED BY PERIPHERAL BLOOD PROGENITOR CELL TRANSPLANTATION

Stiff, P.J.[1], Bensinger, W.I.[2], Emmanouilides, C.[3], Gentile, T.[4], Okano, G.[5], Lu, J.[5], Erder, M.H.[6], Spielberger, R.[7] [1]Loyola University, Maywood, IL; [2]Fred Hutchinson Cancer Research Center, Seattle, WA; [3]UCLA Medical Center, Los Angeles, CA; [4]SUNY Upstate Medical University, Syracuse, NY; [5]Amgen, Inc., Thousand Oaks, CA; [6]Forest Laboratories, Inc., Jersey City, NJ; [7]City of Hope National Medical Center, Duarte, CA.

Background: Oral mucositis (OM) is a frequent complication experienced by patients with hematologic malignancies (HMs) undergoing high-dose chemoradiotherapy (CRT) followed by peripheral blood progenitor cell transplantation (PBPCT). Patients rate OM as the most debilitating side effect of hematologic transplantation. In clinical trials, physicians assess the severity of OM using 1 or more established clinical scales such as the WHO, WCCNR, or RTOG. In a pivotal phase 3 randomized, placebo-controlled, double-blind clinical trial of palifermin (a rHuKGF molecule) in HM patients, patients assessed their OM severity and impact on daily functions through a self-reported OM daily questionnaire (OMDQ). We compared these patient self-reporting results with established clinical OM scales (WHO, WCCNR, and RTOG) and report the findings here. Methods: Over a period of 40 days, patient reported mouth and throat soreness (MTS) and its impact on swallowing, eating, drinking, talking, and sleeping (MTS-AL) were assessed daily using the OMDQ in 212 patients (placebo, n = 106; palifermin, n = 106). The mean daily compliance rate for completing the self-reporting questionnaires over the entire study period was 84% in the placebo group and 89% in the palifermin group. The Pearson correlation coefficients between MTS/MTS-AL scores and clinical OM scales at days 7 and 14 posttransplantation and between the change in scores in MTS/MTS-AL and clinical OM scales between days 7 and 14 posttransplantation were calculated. The daily OM severity grades, as measured by OMDQ, WHO, WCCNR, and RTOG, were graphed for comparison. **Results:** Patients were able to detect the increases

and decreases in severity of OM earlier (from 1 to 3 days) using the MTS than their physicians who were using the 3 OM clinical scales. The self-reported OM pain score was worst at day 5 for MTS, compared to day 7 for the 3 clinical scales. Correlation of the MTS/MTS-AL scores at days 7 and 14 was strongest with the WHO scale (0.25–0.55). MTS/MTS-AL correlation was next strongest with the WCCNR scale (0.27–0.49), followed by the RTOG scale (0.29–0.44). Similarly, the changes in mean scores were significantly correlated between MTS (0.29) or 4 of 5 MTS-AL (0.28–0.33) and the WHO scale. **Conclusion:** The patient self-reported severity and impact of OM measure correlated well with the clinical measures, especially with the WHO scale. In addition, the patient self-reported measure can consistently detect changes (both increases and decreases) in the severity of OM earlier than can any of the OM clinical measures.

Table 1. *Correlation of MTS Questions With WHO Clinical OM Scale*

	Mean Score Correlation Coefficient (r)		
MTS Questions	Day 7	Day 14	Change in Mean Score (Day 7 to Day 14)
MTS (mouth and throat soreness)	0.46 (n = 174)	0.49 (n = 113)	0.29 (n = 100)
MTS-S (swallowing)	0.50 (n = 174)	0.38 (n = 113)	0.29 (n = 100)
MTS-D (drinking)	0.54 (n = 173)	0.43 (n = 113)	0.30 (n = 99)
MTS-E (eating)	0.55 (n = 173)	0.41 (n = 113)	0.33 (n = 99)
MTS-T (talking)	0.45 (n = 172)	0.35 (n = 113)	0.28 (n = 99)
MTS-SL (sleeping)	0.30 (n = 170)	0.25 (n = 113)	0.08 (n = 97)

NOTE: P-values are Day 7: $p \leq 0.001$; Day 14: $p \leq 0.008$; Change in mean score: $p \leq 0.005$ (for MTS, MTS-S, MTS-D, MTS-E, MTS-T); Change in mean score: $p = 0.428$ (for MTS-SL only).

214

LONG-TERM QUALITY OF LIFE IS NOT AFFECTED BY AGE IN AML/MDS PATIENTS AFTER ALLOGENEIC HEMATOPOIETIC STEM CELL TRANSPLANTATION

Shahjahan, M., Alamo, J., Giralt, S., Detry, M., Munsell, M., Estey, E., Champlin, R., de Lima, M. University of Texas M.D. Anderson Cancer Center, Houston, TX.

Objective: Allogeneic hematopoietic stem cell transplantation (alloHSCT) can have significant impact on patients' quality of life (QOL) in the long term. We seek to describe QOL of long-term survivors with AML/MDS and compare QOL as a function of age at transplant. **Methods:** Between January 1976 and September 2001, 544 adult AML/MDS patients received alloHSCT at our institution. Long-term survivorship was defined as survival in remission beyond 2 years post-HSCT because failure rate stabilized in the third year. A total of 129 (24%) patients in remission for at least 2 years were eligible. QOL was assessed with Functional Assessment of Cancer Therapy-Bone Marrow Transplant (FACT-BMT) questionnaire measuring physical, functional, social/family, and emotional well-being (PWB, FWB, SFWB, EWB), including doctor–patient relationship (RWD). An additional concern (AC) subscale also asked questions related to bone marrow transplantation. Response rate was 68%. A higher score on the FACT-BMT reflected a higher QOL. Demographic and clinical data were collected from medical records and clinical database. **Results:** The median patient age at transplantation was 38.44 years (range, 18.54–68.08 years). The study group comprised 47 males and 35 females, 70 with a diagnosis of AML and 12 with a diagnosis of MDS. Conditioning was with reduced intensity regimen (RI) in 29 cases and myeloablative regimen (MA) in 53 cases. The stem cell source was the bone marrow in 52 cases and peripheral blood in 30 cases. Disease status at HSCT was complete remission in 40 cases, relapsed in 37 cases, and untreated disease in 5 cases. Median follow-up time was 4.53 years (range, 2.0–21.1 years). There were no significant differences between the older and younger patients (above and below the median age at transplant) on the PWB, SFWB, EWB, FWB, and RWD subscales. On the AC subscale, older patients had higher QOL scores than younger patients (mean score, 37.97 vs 33.25, respectively; $P = .005$). There were no significant differences in QOL scores between patients receiving RI and MA regimen in all but the AC subscale where RI group had a higher score (39.00 vs 33.34, respectively; $P = .001$). Acute graft-versus-host disease (GVHD) did not impact long-term QOL, but lack of chronic GVHD was associated with better QOL score in the PWB, EWB, FWB, and AC subscales (PWB, 25.04 vs 20.62, $P = .005$; EWB, 21.77 vs 18.98, $P = .003$; FWB, 22.91 vs 18.00, $P = .008$; AC, 40.00 vs 34.28, $P = .002$). **Conclusion:** Older age at transplantation did not affect the QOL in long-term survivors with AML/MDS after alloHSCT.

215

RISK FACTORS FOR CHRONIC KIDNEY DISEASE (CKD) AFTER HEMATOPOIETIC CELL TRANSPLANTATION (HCT)

Hingorani, S.R.[1], Guthrie, K.[2], Schoch, G.[2], McDonald, G.D.[1,2] [1]University of Washington, Seattle, WA; [2]Fred Hutchinson Cancer Research Center, Seattle, WA.

CKD has been reported in 20% of adult and 62% of children in the years following HCT, usually becoming apparent 6–12 months after transplant. Mortality rates are higher in patients with CKD in this setting than in transplantation recipients who retain normal renal function. Although there are numerous case series describing CKD in the setting of HCT, they involve relatively small cohorts of patients. We examined the frequency of CKD and risk factors for its development in a large cohort of patients transplanted over a 10-year time span. **Methods:** We reviewed data from consecutive patients who received their first transplantation between 1991 and 2002 and who had at least 2 serum creatinine values between days 100 and 540 posttransplantation, and at least 1 measurement within 3 months of day 365 or death, whichever came first. CKD was defined as a serum creatinine level $\geq$1.5 mg/dL in men, $\geq$1.3 mg/dL in women and $\geq$ 0.9 mg/dL in children at 2 or more times during day 100–540 posttransplantation. Putative risk factors analyzed included demographic characteristics, type of transplantation, conditioning regimen (including irradiation) and comorbidities such as acute graft-versus-host disease (GVHD) and acute renal failure (ARF), defined as doubling of baseline creatinine before day 60. Using univariable and multivariable Cox regression models, hazard ratios for associations of risk factors with CKD were estimated. **Results:** A total of 1593 patients, with 279 cases of CKD (17.5%), made up the study sample. The 279 cases of CKD occurred at a median of 108 days posttransplantation, with a range of 100–517 days. In a multivariable Cox regression model, adjusted for age, sex, diagnosis, donor and transplantation type, total body irradiation (TBI), cyclosporine prophylaxis, and acute and chronic GVHD, ARF was a significant predictor of CKD (hazard rate = 2.0, 95% comfodence interval = 1.6–2.6). Age, mean total serum bilirubin through day 100, grades 3 and 4 acute GVHD, and chronic GVHD were also significantly associated with CKD after adjusting for all other factors. TBI and donor and transplantation type were not associated with an increased risk of CKD in the multivariable model. **Conclusions:** The prevalence of CKD to 1 year posttransplantation is 17.5%. ARF, jaundice, severe acute GVHD, and chronic GVHD are associated with an increased risk of CKD. Those patients with ARF who survive beyond day 100 should be considered for intervention trials as they are at highest risk.